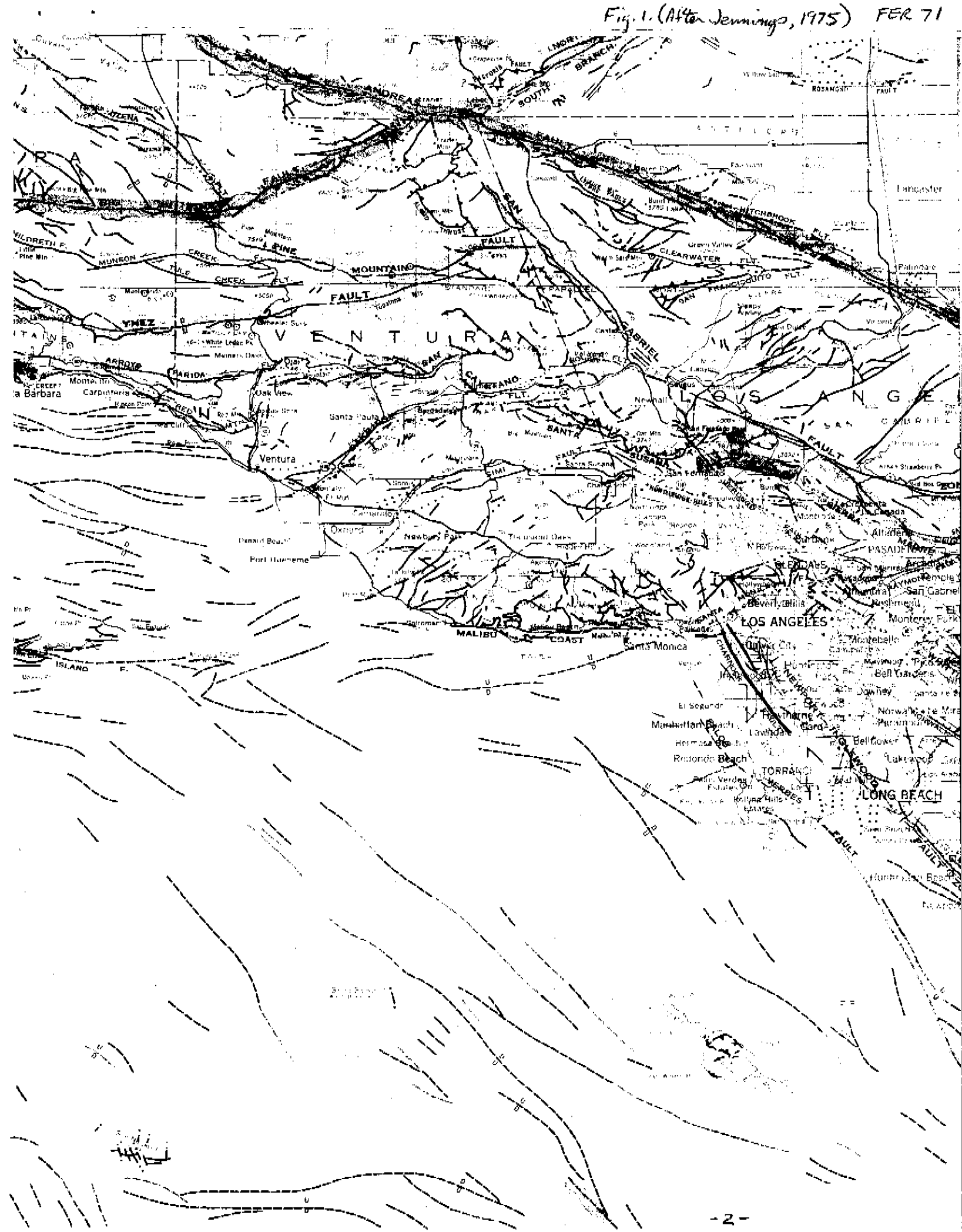


## CALIFORNIA DIVISION OF MINES AND GEOLOGY

## Fault Evaluation Report FER-71

February 15, 1978

1. Name of faults: Overland Avenue, Charnock, and nearby faults.
2. Location of faults: Inglewood, Venice, and Beverly Hills 7.5 minute quadrangles, Los Angeles County (see figure 1).
3. Reason for evaluation: Part of a 10-year program; depicted in orange (Quaternary) by Jennings (1975).
4. List of references:
  - a) Barrows, A.G., 1974, A review of the geology and earthquake history of the Newport-Inglewood structural zone, southern California: California Division of Mines and Geology, Special Report 114, 115 p., map scale 1:125,000.
  - b) Castle, R.O., <sup>1960,</sup> Surficial geology of the Beverly Hills and Venice quadrangles, California: U.S. Geological Survey open-file map, scale 1:48,000.
  - c) Jennings, C.W., 1975, Fault map of California with locations of volcanoes, thermal springs, and thermal wells: California Division of Mines and Geology, Geologic Data Map no. 1, scale 1:750,000.
  - d) Poland, J.F., Garrell, A.A., and Sinott, A., 1959, Geology, hydrology, and chemical character of ground waters in the Torrance-Santa Monica area, California: U.S. Geological Survey, Water-Supply Paper 1461, 425 p., map scale 1:31,680.
  - e) Taber, Stephen, 1920, The Inglewood earthquake in southern California, June 21, 1920: Bulletin of the Seismological Society of America, v. 10, p. 129-145.



- f) Teng, Ta-liang, 1977, Research on prediction and control in Los Angeles Basin and adjacent area in Summaries of Technical Reports, v. III: U.S. Geological Survey, National Earthquake Hazards Reduction Program, p. 123-125.
- g) Thomas, R.G., Landry, J.J., and Turney, R.J. (Principal Investigators), 1961, Planned ~~Utilization~~ utilization of the ground water basins of the coastal plain of Los Angeles County, ground water geology: California Department of Water Resources, Bulletin no. 104, Appendix A, 181 p., 26 plates, 3 attachments.
- h) United States Geological Survey, 1896, Redondo sheet, California (topographic map), scale 1:62,500.
- i) Wentworth, C.M., Ziony, J.I., and Buchanan, J.M., 1970, Preliminary geologic environmental map of the greater Los Angeles area, California: U.S. Geological Survey, report for the Atomic Energy Commission, TID-25363, 41 p., scale 1:250,000.
- j) Ziony, J.I., Wentworth, C.M., Buchanan-Banks, J.M., and Wagner, H.C., 1974, Preliminary map showing recency of faulting in coastal southern California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-585, 15 p., scale 1:250,000.

##### 5. Summary of available data:

Four faults will be discussed in this report, each in a separate section. All four faults lie west of the Newport-Inglewood structural zone of Barrows (1974). The area is seismically active; however, seismic events (from 1971 to 1976) are scattered and are not obviously associated with any of these faults (Teng, 1977).

### Overland Avenue

The Overland Avenue fault is depicted by Poland, et al. (1959) as an inferred fault, cutting late Pleistocene terrace deposits and concealed under alluvium. Ziony, et al. (1974) note that the alluvium is not cut by the fault<sup>(see plate 1)</sup>. No such notation is made (by Ziony, et al.) unless the alluvium is at least 3,000 years old. Poland, et al. (p. 76-78) state that the "50-foot gravel" of Ballona<sup>a</sup> Gap (which is apparently earliest Holocene or pre-Holocene) is not cut by the Overland Avenue fault. The dip of the Overland Avenue fault is unknown. The western side has been downdropped about 30 feet (Poland, et al., p. 77); and the fault apparently forms a ground water barrier. The fault apparently has not been observed at the surface.

### Charnock fault

Again, the Charnock fault is only depicted as an inferred fault (Poland, et al., 1959; Castle, 1960). The fault, which trends almost parallel to the Overland Avenue fault, is east side down -- thus the area between the Overland Avenue fault and the Charnock is apparently a graben. The attitude of the Charnock fault is not known. The base of the San Pedro Formation has apparently been displaced 140 feet (vertical component). The Charnock fault, too, fails to displace the "50-foot gravel" of Ballona Gap (Poland, et al., p. 76-78) but is depicted as cutting the upper Pleistocene terrace deposits. Ziony, et al. (1974) agree. The fault has apparently not been observed at the surface.

Unnamed, east-west trending fault in Santa Monica

Poland, et al. (1959, plate 2) depicts an inferred, unnamed, east-west trending fault in Santa Monica, just west of the northern end of the Charnock fault. The fault is not discussed in the text, and the sense of movement is not noted on the map. The fault is shown as inferred to cut the upper Pleistocene terrace deposits, but buried under alluvium (Holocene). Ziony, et al. (1974) depict the fault as cutting a late Pleistocene unit. Castle (1960) does not show a fault in this location, however, he does show a series of symbols ("base of scarp or break in slope") which nearly coincide with Poland, et al.'s. inferred trace within and older alluvial unit (Pleistocene). Such features may be erosional or depositional in origin, and not related to faulting. (Castle's cross-sections were not readily available for inspection; thus, any conclusions reached did not consider any data on these cross-sections.)

Unnamed, inferred fault in northern Gardena

Wentworth, et al. (1970) and Ziony, et al. (1974) show an inferred fault in the Gardena area (plate 3). They based this fault on an 1896 topographic map (figure 2) and a description by Taber (1920, p. 140). Taber describes several closed depressions in the area from Sec. 19, T. 2 S., R 14 W. (plate 2) to the area noted in red on plate 3. These described features are discontinuous, and are apparently the basis for the fault and star symbols (short, Quaternary faults) shown by Ziony, et al. Taber describes faults of the Newport-Inglewood zone but does not cite any evidence other than that already noted for the existence of a fault or series of faults along this particular trend (Taber didn't show these faults on a map).

6. Interpretation of air photos: Not attempted.
7. Field observations: Not attempted.
8. Conclusions:

All of the faults discussed are inferred either from subsurface data or anomalous topography. However, apparently none of these faults have been observed at the surface. Based on this information the faults may be considered ill-defined. Refining the location of the faults, if they do reach the surface, is likely to be an expensive and perhaps impossible task because of the urban sprawl now present.

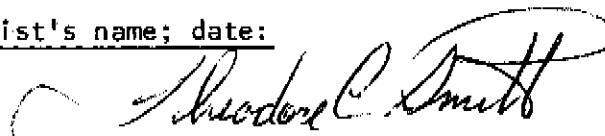
The Overland Avenue and Charnock faults are probably pre-Holocene and thus do not meet the State's current definition of an active fault.

The east-west fault of Poland, et al. (1959) in Santa Monica may be expressed in the topography (Castle, 1960) or may merely appear to coincide with these features. Of all the faults discussed, this <sup>late Quaternary fault</sup> ~~one~~ appears to be the only <sup>one</sup> ~~fault~~ where further study might lead to some definitive answers <sup>with respect to remanence of movement</sup>. Even in this instance, though, the odds are against this happening.

The unnamed fault in the Gardena area is based only on some indistinct, rather broad topographic features and is highly speculative. Such features could be the result of folding, <sup>subsidence due to</sup> fluid withdrawal, or some other phenomenon but is not necessarily fault created.

9. Recommendations:

Based on the information discussed herein and the present project guidelines, zoning of these four faults (Overland Avenue, Charnock, and two unnamed faults) is not recommended at this time. No further work appears to be necessary on the part of this project's personnel on the Overland Avenue and Charnock faults. It is doubtful that any new definitive information could be gathered in the time remaining on this year's project along the other faults. For this reason, no further work is recommended.

10. Investigating geologist's name; date:

THEODORE C. SMITH  
Assistant Geologist  
RG 3445  
February 15, 1978

*I agree with the  
recommendations.  
ECS  
3/3/78*